SAF-RC-210 100-IU-2 & 100-IU-6 Miscellaneous Restoration Sites Near 100F - Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt

COMMENTS:

SDG J01528

SAF-RC-210

Sample Location: 600-320:6

Date:

18 April 2013

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-IU-2 & 100-IU-6 Misc. Restoration Sites near 100F - Soil Full Protocol -

Waste Site 600-320:6

Subject:

Inorganics - Data Package No. J01528-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. J01528 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PP82	5/24/12	Soil	С	See note 1

^{1 -} ICP metals (6010B) and mercury by 7471A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

· Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and

analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (60%) and silicon (27%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (18%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. J01528 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike recoveries outside QC limits, all antimony (60%) and silicon (27%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits, all silicon (18%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: J01528	REVIEWER: ELR	Project: 600-320:6	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Analytical Data

Client: Washington Closure Hanford Job Number: 280-29396-1

Sdg Number: JQ1528

Client Sample ID:

J1PP82

Lab Sample ID:

280-29396-1

Client Matrix:

Solid

% Moisture:

15.8

Date Sampled: 05/24/2012 1037

Date Received: 05/30/2012 0930

6010B Metals (ICP)

Analysis Method: Prep Method: 6010B 3050B 1.0 Analysis Batch: Prep Batch: 280-123041 280-121992 Instrument ID: Lab File ID: MT_026 26A060712.asc

Initial Weight/Volume: Final Weight/Volume:

1.02 g 100 mL

Dilution:	1.0	
Analysis Date:	06/07/2012 1441	V (1) (2
Prep Date:	06/07/2012 0800	14/17/13

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifler	MDL	RL
Aluminum		6630		1.8	5.8
Antimony		0.71	1	0.44	0.70
Arsenic	•	2.0	M	0.77	1.2
Barium		60.6		0.088	0.58
Beryllium		0.15	В	0.038	0.23
Boron		1.1	U	1.1	2.3
Cadmium		0.13	В	0.048	0.23
Calcium		5900		16.4	58.2
Chromium		9.9		0.068	0.23
Cobalt		7.8	X	0.12	1.2
Copper		17.0		0.25	1.2
Iron		20900		4.4	5.8
Lead		3.9		0.31	0.58
Magnesium		4870		4.3	23.3
Manganese		308		0.12	1.2
Molybdenum		0.34	В	0.30	2.3
Nickel		11.7	X	0.14	4.7
Potassium		880		47.7	349
Selenium		1.0	U	1.0	1.2
Silicon		398	J	6.6	11.6
Silver		0.19	Ū	0.19	0.23
Sodium		278		68.7	140
Vanadium		57.0		0.11	2.3
Zinc		41.5	X	0.46	1.2

7471A	Mercury	(CVAA)
17/10	Mairail	10100

Analysis Method: Prep Method:

Analysis Date:

Dilution:

7471A 7471A 1.0

06/07/2012 1942

Analysis Batch: Prep Batch: 280-123128 280-121837 Instrument ID: Lab File ID: MT_033 120607aa3.txt

Initial Weight/Volume: Final Weight/Volume:

0.61 g 50 mL

Prep Date: 06/07/2012 1125

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0065 Qualifler

MDL 0.0065 RL 0.020

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-29396-1

SDG #: J01528 SAF#: RC-210

Date SDG Closed: May 30, 2012 Data Deliverable: 21 Day / Summary

CLIENT ID J1PP82

LAB ID 280-29396-1 **ANALYSES REQUESTED**

6010B/7471/1311-6010-7470/WTPH-D+/8310

ANALYSES PERFORMED

6010B/7471A/1311/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

The sample was received on 5/30/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.2° C and 5.4° C.

Sample J1PP82, requesting TCLP Metals 1311/6010B/7470A analysis, was leached and placed on hold, as instructed on the chain-of-custody. On 6/19/2012, the client instructed the laboratory to cancel the requested TCLP Metals 1311/6010B/7470A analysis.

GC SEMIVOLATILES - NWTPH-Dx - DRO

Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-122620. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The MSD aliquot of the MS/MSD performed on sample J1PP82 exhibited the surrogate recovery outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-121992 indicates that physical and chemical interferences are present for Cobalt, Nickel and Zinc. Results have been flagged with an "X".

Low levels of Nickel and Zinc are present in the method blank associated with batch 280-121992. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Page 3 of 33

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PP82; therefore, control limits are not applicable.

The duplicate analysis of sample J1PP82 exhibited RPD data outside the control limits for Arsenic, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

5.4,52 ,AI 5, 5/30

Washington Closure Hanford		HAIN OF CUST	CODY/S	AMPL	E ANAL	YSIS	REQUES	st	F	RC-210-045	Page 1 o	f · 1
Collector MOORE, BR	Com	pany Contact in Kessner	Telephon				Project Coor KESSNER, J	digator	Price Cod		Data Turi	24 12 around
Project Designation 100-IU-2 & 100-IU-6 Miscellaneous Restoration		pling Location 0-320:6					SAF No. RC-210			8D	21 1	ays ays
Ice Chest No. RCC-07-012		Logbook No. L-1651-03		COA 0603202	000	,	Method of Si FedEx	doment				
Shipped To TestAmerica Incorporated, Richland	Offai	ite Property No.	A-110.	382			Bill of Ladia See OSPC		No.			
POSSIBLE SAMPLE HAZARDS/REMARKS	300			202				1		1		
None .		Preservation	Cool 4C	None	Coal 4C	Cool 4						
Special Handling and/or Storage		Type of Container	G/P	G/P	G	aG 1		-	-		-	
Cool 4C		No. of Container(s)	1 10.7	1 120mL	120mL	120m	,	-	+-	-		<u> </u>
		Volume	60mL	120tal.								
SAMPLE A	NALYSIS		See item (1) in Special Instructions.	See item (2) i Special Instructions	Range - WIPH-D+	PAHs -		١.				
Sample No. Matrix *	Sample Date	Sample Time	SHAPE						O THE			
J1PP82 SOIL	5/24/12	1037	X	X	X	X						
					-	_		-	+-	_		
\$			-			-	-	+-	+	-		
	+		-		+	-	_	+	+	_		
CHAIN OF POSSESSION	Sign/Pri	at Names		SPE	CIAL INSTE	RUCTIO	NS .					Matrix *
Relinquished By/Removed From Broad More 1/2 5-24-12 132 Relinquished By/Removed From Date/Time Date/Time Study of the beach Study 12	1535 20049	Heidelberg A.		(i) (i) (ii) (iii) (iii)	ICP Metals - 60 mium, Calcium, cel, Potassium, S	10TR (Cl Chromin Selenium,	n, Cobalt, Coppe Silicon, Silver, S	iminum, Ant r, Iron, Lead iodium, Vana	Magnesium, i inum, Zinc); b	c, Barium, Beryllium Manganese, Molybo Mercury - 7471 - (C	n, Boron, ienem, V)	9-Sail SB-Subinus ^{et} SO-Solid SI-Slutge W = Water O-Off A-Air
Description Burning Description of the Description		and in fed CX	nte/Time	(2) Silv	Metals by ICM er); Meanry (T	QP)	1311/6010 (Arse 11/7470 (Mercu	mc, Berium, (ry)	Cadenum, Car	romium, Lead, Seler	[3	DG=Deum ficielli DC=Deum Liquids T=Tionse
Relinquished By/Removed From Date/Time	Received By/St	3	730114	230		EA YE		50	6];	Wi×Wipe L=Liquid V=Vegenetus
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LABORATORY Received By SECTION			Tixi	le						. E	ete/Time	
FINAL SAMPLE Disposal Method DISPOSITION					Dispo	seed By				1	Desc/Time	

Appendix 5

Data Validation Supporting Documentation

LEVEL:	Α [В	\circ	D	Е
PROJECT:	600-320) ()	DATA PACKAG	E: J0 1	SSK
VALIDATOR:	PLR	LAB: TA	- <u>L</u>	DATE: Y	14/13
				J01528	
		ANALYSES	PERFORMED		
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MAT	RIX				
J1P	P82				

					C+ (
L					3011
	ACKAGE COMPL				
	ion documentation j				Yes(No) N/A
					Yes (No) N/A
Comments:					Yes No N/A
Comments:	MENT PERFORM	IANCE AND CAL	JBRATIONS (Lev	vels D and E)	
2. INSTRU Initial calibrations	MENT PERFORM	IANCE AND CAL	JBRATIONS (Lev	vels D and E)	Yes No N/A
2. INSTRU Initial calibrations	MENT PERFORM performed on all insacceptable?	IANCE AND CAL	JBRATIONS (Lev	vels D and E)	Yes No N/A
2. INSTRU Initial calibrations Initial calibrations ICP interference cl	MENT PERFORM performed on all insacceptable?	IANCE AND CAL struments?	JBRATIONS (Lev	vels D and E)	Yes No N/A
2. INSTRU Initial calibrations Initial calibrations ICP interference cl	MENT PERFORM performed on all ins acceptable? hecks acceptable?	IANCE AND CAL struments?	JBRATIONS (Lev	vels D and E)	Yes No N/AYes No N/AYes No N/A
2. INSTRU Initial calibrations ICP interference cl ICV and CCV che ICV and CCV che	MENT PERFORM performed on all ins acceptable? hecks acceptable?	IANCE AND CAL struments?	IBRATIONS (Lev	vels D and E)	Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/A
2. INSTRU Initial calibrations Initial calibrations ICP interference cl ICV and CCV che ICV and CCV che Standards traceabl	MENT PERFORM performed on all insacceptable? hecks acceptable? cks performed on al	IANCE AND CAL struments?	JBRATIONS (Lev	vels D and E)	Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/AYes No N/A
2. INSTRU Initial calibrations ICP interference cl ICV and CCV che ICV and CCV che Standards traceabl Standards expired	MENT PERFORM performed on all instanceptable? hecks acceptable? cks performed on al cks acceptable?	IANCE AND CAL struments? l instruments?	IBRATIONS (Lev	vels D and E)	Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/AYes No N/AYes No N/A

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No
ICB and CCB results acceptable? (Levels D, E)	Yes No N/A
Laboratory blanks analyzed?	(Yes/No N/A
Laboratory blank results acceptable?	
Field blanks analyzed? (Levels C, D, E)	Yes No N/A
Field blank results acceptable? (Levels C, D, E)	Yes No NA
Transcription/calculation errors? (Levels D, E)	Yes No (N/)
Comments:	
	no FB
4. ACCURACY (Levels C, D, and E)	
MS/MSD samples analyzed?	(.Yes) No N/A
MS/MSD results acceptable?	<u> </u>
MS/MSD standards NIST traceable? (Levels D, E)	Yes No NA
MS/MSD standards expired? (Levels D, E)	Yes No WA
LCS/BSS samples analyzed?	(Yes) No N/A
LCS/BSS results acceptable?	Yes(No) N/A
Standards traceable? (Levels D, E)	Yes No N/
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Performance audit sample(s) analyzed?	Yes (No) N/A
Performance audit sample results acceptable?	Yes No N/A
Comments: Les - Si (com (1820) - J	al
MS- 44+1my (COZ) SIlican (272)	- Jalf
	no PAS

5.	PRECISION (Levels C, D, and E)			
	ate RPD values acceptable?	X 7)	No N/	A
Duplica	ate results acceptable?	(Yes	No N	4
MS/MS	SD standards NIST traceable? (Levels D, E)	Yes	No No	外
MS/MS	SD standards expired? (Levels D, E)	Yes	No N	外
Field d	luplicate RPD values acceptable?	Yes	No X	2/
Field s _l	plit RPD values acceptable?	Yes	No (N	
Transc	ription/calculation errors? (Levels D, E)	Yes	No (N	ク
Comm	nents:			
6.	ICP QUALITY CONTROL (Levels D and E)			
ICP se	erial dilution samples analyzed?	Yes	No N	[/ A
ICP se	erial dilution %D values acceptable?	Yes	No N	í/A
	ost digestion spike required?			
	ost digestion spike values acceptable?			
	ards traceable?			
	ards expired?			
	cription/calculation errors?			
	nents:			

7.	FURNACE AA QUALITY CONTROL (Levels D and E)		/	
Duplic	cate injections performed as required?	Yes 1	1 6	N/A
Duplic	cate injection %RSD values acceptable?	Yes ?	No 1	N/A
Analyt	tical spikes performed as required?	Yes 1	No 1	N/A
Analyt	tical spike recoveries acceptable?	Yes 1	No :	N/A
Standa	ards traceable?	Yes 1	Nd :	N/A
Standa	ards expired?	Yes	Nþ :	N/A
MSA į	performed as required?	Yes	Nþ	N/A
MSA i	results acceptable?	Yes	No	N/A
Transo	cription/calculation errors?	Yes	Nb	N/A
	nents:			<u> </u>
8.	HOLDING TIMES (all levels)	\bigcap		
	oles properly preserved?	Yes	No	N/A
Samp	ble holding times acceptable?	Yes	No	N/A
	ments:			
			 	

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	
Results reported for all requested analyses?	(.Yes No NA
Results supported in the raw data? (Levels D, E)	Yes No N
Samples properly prepared? (Levels D, E)	Yes No WA
Detection limits meet RDL?	Yes No NA
Transcription/calculation errors? (Levels D, E)	Yes No N/
Comments:	

Appendix 6

Additional Documentation Requested by Client

Job Number: 280-29396-1

Sdg Number: J01528

Method Blank - Batch: 280-121992

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

MB 280-121992/1-A Solid

Analysis Batch: Prep Batch: Leach Batch:

280-123041 280-121992

Instrument ID: Lab File ID:

MT_026 26A060712.asc

Dilution: Analysis Date: 1.0

Units:

N/A mg/Kg Initial Weight/Volume: Final Weight/Volume:

1 g 100 mL

0.094

0.40

2.0

1.0

Prep Date: Leach Date:

Zinc

Vanadium

06/07/2012 1437 06/07/2012 0800

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	3.8	Ū	3.8	5.0
Lead	0.27	Ü	0.27	0.50
Magnesium	3.7	Ū	3.7	20.0
Manganese	0.10	Ū	0.10	1.0
Molybdenum	0.26	Ū	0.26	2.0
Nickel	0.226	В	0.12	4.0
Potassium	41.0	Ū	41.0	300
Selenium	0.86	Ū	0.86	1.0
	5.7	ŭ	5.7	10.0
Silicon	0.16	Ü	0.16	0.20
Silver	59.0	Ü	59.0	120
Sodium	59.0	J	33.0	

0.094

0.570

U

Job Number: 280-29396-1

Sdg Number: J01528

Lab Control Sample - Batch: 280-121992

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

LCS 280-121992/2-A

Analysis Batch: Prep Batch:

280-123041 280-121992 Instrument ID: Lab File ID:

MT_026 26A060712.asc

Dilution:

Solid 1.0

Leach Batch: Units:

N/A mg/Kg Initial Weight/Volume:

1 g

Analysis Date: Prep Date:

06/07/2012 1439 06/07/2012 0800 Final Weight/Volume:

100 mL

each	Date:	N/A

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	194.1	97	82 - 116	
Antimony	50.0	50.26	101	82 - 110	
Arsenic	100	102.2	102	85 - 110	
Barium	200	204.0	102	87 - 112	
Beryllium	5.00	4.89	98	84 - 114	
Boron	100	103.1	103	81 - 110	
Cadmium	10.0	10.69	107	87 - 110	
Calcium	5000	4965	99	82 - 114	
Chromium	20.0	20.89	104	84 - 114	
Cobalt	50.0	50.70	101	87 - 110	
Copper	25.0	25.52	102	88 - 110	
Iron	100	100.8	101	87 - 120	
Lead	50.0	50.99	102	86 - 110	
Magnesium	5000	4924	98	90 - 110	
Manganese	50.0	49.81	100	88 - 110	
Molybdenum	100	101.7	102	86 - 110	
Nickel	50.0	50.44	101	87 - 110	
Potassium	5000	4959	99	89 - 110	
Selenium	200	206.7	103	83 - 110	
Silicon	1000	177.2	18	10 - 70	
Silver	5.00	5.37	107	87 - 114	
Sodium	5000	5175	104	90 - 112	
Vanadium	50.0	52.54	105	88 - 110	
Zinc	50.0	49.70	99	76 - 114	

Client: Washington Closure Hanford Job Number: 280-29396-1

Sdg Number: J01528

Matrix Spike - Batch: 280-121992

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

28

280-29396-1

Analysis Batch: Prep Batch: 280-123041 280-121992 Instrument ID: Lab File ID: MT_026

Dilution:

Solid 1.0 06/07/2012 1446

Leach Batch: Units: N/A

Initial Weight/Volume:

26A060712.asc 1.01 g

Analysis Date: Prep Date:

06/07/2012 1446

s: mg/Kg

Final Weight/Volume:

1.01 g 100 mL

Leach Date:

N/A

Analyte	Sample Res	sult/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	6630		235	8960	989	50 - 200	4
Antimony	0.71		58.8	36.11	60	20 - 200	
Arsenic	2.0		118	112.3	94	76 - 111	
Barlum	60.6		235	287.9	97	52 - 159	
Beryllium	0.15	В	5.88	5.46	90	72 - 105	
Boron	1.1	U	118	108.1	92	75 - 107	
Cadmium	0.13	В	11.8	11.65	98	40 - 130	
Calcium	5900		5880	12990	121	43 - 165	
Chromium	9.9		23.5	35.39	108	70 - 200	
Cobalt	7.8		58.8	61.81	92	72 - 106	
Copper	17.0		29.4	42.48	87	37 - 187	
Iron	20900		118	22930	1734	70 - 200	4
Lead	3.9		58.8	57.21	91	70 - 200	
Magnesium	4870		5880	11530	113	64 - 145	
Manganese	308		58.8	412.6	178	40 - 200	4
Molybdenum	0.34	В	118	106.5	90	75 - 103	
Nickel	11.7		58.8	67.43	95	61 - 126	
Potassium	880		5880	6514	96	56 - 172	
Selenium	1.0	U	235	221.0	94	76 - 104	
Silicon	398		1180	713.7	27	20 - 200	
Silver	0.19	U	5.88	5.85	100	75 - 141	
Sodlum	278		5880	6024	98	78 - 111	
Vanadium	57.0		58.8	121.7	110	50 - 169	
Zinc	41.5		58.8	97.52	95	70 - 200	

Job Number: 280-29396-1

Sdg Number: J01528

Duplicate - Batch: 280-121992

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID:

280-29396-1

Analysis Batch:

280-123041 280-121992 Instrument ID: Lab File ID: MT_026 26A060712.asc

Client Matrix: Dilution: Analysis Date:

Solid 1.0 Prep Batch: Leach Batch: Units:

280-12199 N/A mg/Kg

initial Weight/Volume: Final Weight/Volume:

1.04 g 100 mL

Prep Date:

06/07/2012 1449 06/07/2012 0800

Leach Date:

N/A

Analyte	Sample Resul	Sample Result/Qual		RPD	Limit	Qual
Aluminum	6630		6395	4	40	
Antimony	0.71		0.43	NC	40	U
Arsenic	2.0		1.24	46	30	M
Barium	60.6		59.47	2	30	
Beryllium	0.15	В	0.158	4	30	В
Boron	1.1	U	1.1	NC	30	U
Cadmium	0.13	В	0.161	22	30	В
Calcium	5900		5930	0.5	30	
Chromium	9.9		9.01	10	40	
Cobalt	7.8		8.25	6	30	
Copper	17.0		14.64	15	30	
Iron	20900		22290	6	40	
Lead	3.9		4.84	21	40	
Magnesium	4870		4993	2	30	
Manganese	308		313.2	2	40	
Molybdenum	0.34	В	0.321	7	30	В
Nickel	11.7	_	14.26	20	30	
Potassium	880		810.2	8	40	
	1.0	U	0.98	NC	30	U
Selenium	398	Ū	444.7	11	40	
Silicon	0.19	U	0.18	NC	30	U
Silver	278	J	249.1	11	30	
Sodium			54.45	5	30	
Vanadium	57.0		42.66	3	40	
Zinc	41.5		42.00	3	70	

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Method Blank - Batch: 280-121837

Method: 7471A Preparation: 7471A

Lab Sample ID:

MB 280-121837/1-A Solid

Analysis Batch: Prep Batch:

280-123128 280-121837 Instrument ID:

MT_033

Client Matrix:

Lab File ID:

120607aa3.txt

Dilution: Analysis Date: 1.0

Leach Batch: Units:

N/A

Initial Weight/Volume:

0.6 g

MT 033

0.6 g

50 mL

120607aa3.txt

Prep Date:

06/07/2012 1937 06/07/2012 1125

mg/Kg

Final Weight/Volume:

50 mL

Leach Date:

N/A

Result

Qual

MDL

RL

Analyte Mercury

0.0055

Ū

Method: 7471A

Instrument ID:

Lab File ID:

Preparation: 7471A

Initial Weight/Volume:

Final Weight/Volume:

0.0055

0.017

Lab Control Sample - Batch: 280-121837

LCS 280-121837/2-A

Solid

1.0

Analysis Date: 06/07/2012 1940

06/07/2012 1125

Prep Date: Leach Date:

Lab Sample ID:

Client Matrix:

Dilution:

Mercury

N/A

Analyte

Spike Amount

0.417

Analysis Batch:

Prep Batch:

Units:

Leach Batch:

Result 0.430

280-123128

280-121837

N/A

mg/Kg

% Rec. 103

Limit

87 - 111

Qual

Matrix Spike - Batch: 280-121837

280-29396-1 Analysis Batch:

Prep Batch: Leach Batch:

Units:

0.0065

280-123128 280-121837 N/A

mg/Kg

Instrument ID: Lab File ID: Initial Weight/Volume:

Final Weight/Volume:

Method: 7471A

Preparation: 7471A

MT_033 120607aa3.txt 0.53 g

50 mL

Analysis Date: Prep Date:

Client Matrix:

Dilution:

Lab Sample ID:

06/07/2012 1951 06/07/2012 1125

Leach Date:

N/A

Solid

1.0

Analyte Mercury

Sample Result/Qual

U

Spike Amount

0.560

Result 0.564

% Rec. 101

Limit 87 - 111 Qual

TestAmerica Denver

Page 27 of 33

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Duplicate - Batch: 280-121837

Method: 7471A Preparation: 7471A

Lab Sample ID:

280-29396-1

Analysis Batch:

280-123128

Instrument ID: Lab File ID: MT_033

Client Matrix:

Solid

Prep Batch: 28

280-121837 Lab Fil

120607aa3.txt

Dilution: Analysis Date: 1.0

Leach Batch: Units: N/A mg/Kg Initial Weight/Volume: Final Weight/Volume:

0.51 g 50 mL

Prep Date: Leach Date: 06/07/2012 1949 06/07/2012 1125

.

N/A

 Analyte
 Sample Result/Qual
 Result
 RPD
 Limit
 Qual

 Mercury
 0.0065
 U
 0.0077
 NC
 20
 U

Date:

18 April 2013

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-IU-2 & 100-IU-6 Misc. Restoration Sites near 100F - Soil Full Protocol -

Waste Site 600-320:6

Subject: Polyaromatic Hydrocarbons - Data Package No. J01528-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. J01528 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PP82	5/24/12	Soil	C	See note 1

^{1 -} Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for nondetects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of

compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required. All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. J01528 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: J01528	REVIEWER: ELR	Project: 600-320:6	PAGE_1_OF_1			
COMMENTS: No qualifiers assigned						

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Analytical Data

Job Number: 280-29396-1

Sdg Number: J01528

Client Sample ID:

J1PP82

Client: Washington Closure Hanford

Lab Sample ID:

280-29396-1

Client Matrix:

06/01/2012 1811

Solid

% Moisture:

15.8

Date Sampled: 05/24/2012 1037 Date Received: 05/30/2012 0930

8310 PAHs (HPLC)

Analysis Method: Prep Method:

Prep Date:

8310 3550C Analysis Batch: Prep Batch:

280-122503

Instrument ID: Initial Weight/Volume: CHHPLC_G 32.6 g 4000 uL

Dilution: Analysis Date:

1.0 06/06/2012 0828

280-122215

Final Weight/Volume: Injection Volume: Result Type:

20 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
		11	U	11	110
cenaphthene		9.8	U	9.8	110
Acenaphthylene		3.3	U	3.3	22
Inthracene		3.5	Ū	3.5	16
Benzo[a]anthracene		7.0	Ü	7.0	16
Benzo[a]pyrene		4.6	Ü	4.6	16
Benzo[b]fluoranthene		4.6 7.9	Ü	7.9	33
3enzo(g,h,i]perylene			Ü	4.3	16
Benzo[k]fluoranthene		4.3	Ü	5.3	44
Chrysene		5.3	Ü	12	33
Dibenzo(a,h)anthracene		12	U	14	44
Fluoranthene		14		5.8	33
Fluorene		5.8	U	13	33
ndeno[1,2,3-cd]pyrene		13	U		110
Naphthalene		13	U	13	44
Phenanthrene		13	U	13	44
Pyrene		13	U	13	4-1
Surrogate		%Rec	Qualifier		ance Limits
Terphenyl-d14 (SUR)		85		72 - 11	5

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-29396-1

SDG #: J01528 SAF#: RC-210

Date SDG Closed: May 30, 2012 Data Deliverable: 21 Day / Summary

CLIENT ID

LAB ID

ANALYSES REQUESTED

ANALYSES PERFORMED

PD82 280-2

280-29396-1

6010B/7471/1311-6010-7470/WTPH-D+/8310

6010B/7471A/1311/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The sample was received on 5/30/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.2° C and 5.4° C.

Sample J1PP82, requesting TCLP Metals 1311/6010B/7470A analysis, was leached and placed on hold, as instructed on the chain-of-custody. On 6/19/2012, the client instructed the laboratory to cancel the requested TCLP Metals 1311/6010B/7470A analysis.

GC SEMIVOLATILES - NWTPH-Dx - DRO

Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-122620. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The MSD aliquot of the MS/MSD performed on sample J1PP82 exhibited the surrogate recovery outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-121992 indicates that physical and chemical interferences are present for Cobalt, Nickel and Zinc. Results have been flagged with an "X".

Low levels of Nickel and Zinc are present in the method blank associated with batch 280-121992. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Page 3 of 33

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PP82; therefore, control limits are not applicable.

The duplicate analysis of sample J1PP82 exhibited RPD data outside the control limits for Arsenic, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

5.4,52 (Al si 5/30

Washington Clos	ure Hanford	C	HAIN OF CUS	TODY/S	AMPLI	ANAL	YSIS	REQUI	EST		RC-210-045	Page 1	of · 1
							Project Coordinator KESSNER, JH Price		Price Cod	SE SHIS		5 24 12 urnaround	
Project Designation 100-IU-2 & 100-IU-6 Miscellaneous Restoration Sites Near 1 600-320:6							SAF No. RC-210			8D	21	Days	
Ice Chest No. RCC-	07-012		Logbook No. -1651-03		COA 06032020	00	,	Method of FedEx	Shipment				
Shipped To TestAmerica Incorporated		Offsic	te Property No.	A110	382	_		Bill of Lad See OSP	ing/Air Bill C	No.			
POSSIBLE SAMPLE HAS None	ZARDS/REMARKS	3".	Preservation	Coal 4C	None	Cool 4C	Cool 4	4C					
Special Wandling and/or	· Ctowner		Type of Container	G/P	G/P	G	∎G						
Special Handling and/or Cool 4C	Swrage		No. of Container(s)	1	1	1.	1						
			Volume	60mL	120mL	120mL	120m	ıL					
	SAMPLE ANA	ALYSIS		See item (1) in Special Instructions.	Son item (2) in Special Instructions.	TPH-Diesel Range - WIPH-D +	PAHs - I	E310					
Sample No.	Matrix •	Sample Date	Sample Time							EL SER			
J1PP82	SOIL	5/24/12	1037	Х	Х	X	X						
							_		_	_			-
		-					_	-	+	+	-		+
				_		-	-	+-		+	+		1
CHAIN OF POSSESS Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From	DeterTime 5-34-12 1320 DeterTime 15: Spell 2 DeterTime DeterTime DeterTime DeterTime	Received By/Ston	respective property produced in Company produced in Da	ate/Time	Please (1) 10 74/ Cadm Nicke (Mar (2) M Silver	P Metals - 60 hum, Calcium, A Potassium, S hury} crais by ICDA HERY	d TCLP m 10TR (Ck Chromius klenium, 1	notale, per Joan nose-out List) (/ n, Cobalt, Copp Silicon, Silver, 311/6010 (Ara 1/7470 (Merce	imainum, Antor, Iron, Lead Sodium, Vana	, Magnesium,) dium, Zine); M Cadmium, Chr	., Berium, Beryllham Manganese, Molybd fercury - 7471 - (CV omium, Lead, Seleni	edani, ()	Matrix * S-Said SD-Saidment SO-Gold SS-Sladge W = Water O-Oil A-Ale DE-Down Selde To Tissee WW-Why Le-Lageid V-Vagazales X-Other
LABORATORY Received Received	Ву			Tid	•				- 11		De	de/l'une	
FINAL SAMPLE Disposel I	Method					Dispo	sod By				De	ate/Time	

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	Е
PROJECT:	600-37	2016	DATA PACKAG	ie: J 01	\$5&
VALIDATOR:	ELR	LAB: TA		DATE: 4/	14/13
			SDG: J	V1524	
		ANALYSES	PERFORMED		
8015	8021	8141	8151	8315	(8310)
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MA	TRIX:				
	PP85				
<u>~ ((</u>	roc				
					_
DATA	DACKACE COMP	N ETENESS AND	CASE NADDATIV	VF	20/1
Technical verific	PACKAGE COMP ation documentation	present?			
Technical verific	ation documentation	present?			
Technical verific	ation documentation	present?			
Technical verific	ation documentation	present?			
Technical verific	ation documentation	present?		· · · · · · · · · · · · · · · · · · ·	
Technical verification Comments:	ation documentation	apresent?	ION (Levels D and	1 E)	Yds No 1)/
Comments: INSTR Initial calibration	umentation ument tuning a acceptable?	AND CALIBRAT	ION (Levels D and	l E)	Yes No N/
Technical verification Comments: INSTR Initial calibration Continuing calib	umentation Ument Tuning as acceptable?	AND CALIBRAT	ION (Levels D and	I E)	Yes No
Comments: INSTR Initial calibration Continuing calib Standards traceal	UMENT TUNING as acceptable?	AND CALIBRAT	ION (Levels D and	I E)	Yes No N/Yes No N/Yes No N/Yes No N/
2. INSTR Initial calibration Continuing calib Standards traceal Standards expire	umentation Ument Tuning as acceptable?	AND CALIBRAT	ION (Levels D and	I E)	Yes No

BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No
Calibration blank results acceptable? (Levels D, E)	Yes No N/A
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes(Ng) N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes No (N/)
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	no fg
4. ACCURACY (Levels C, D, and E)	Yes) No N/A
Surrogates/system monitoring compounds analyzed?	
Surrogate/system monitoring compound recoveries acceptable?	,
Surrogates traceable? (Levels D, E)	~
Surrogates expired? (Levels D, E)	
MS/MSD samples analyzed?	
MS/MSD results acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards expired? (Levels D, E)	
LCS/BSS samples analyzed?	Ved No N/A
LCS/BSS results acceptable?	
Standards traceable? (Levels D, E)	Yes No (N/A
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Performance audit sample(s) analyzed?	Ye(N) N/A
Performance audit sample results acceptable?	
Comments:	no P45

5.	PRECISION (Levels C, D, and E)	\bigcirc
Dupl	licate RPD values acceptable?	No N/A
Dupl	licate results acceptable?	
MS/N	MSD standards NIST traceable? (Levels D, E)	es No
MS/N	MSD standards expired? (Levels D, E)	Yes No N
Field	d duplicate RPD values acceptable?	Yes No (N
Field	d split RPD values acceptable?	Yes No N/A
Tran	nscription/calculation errors? (Levels D, E)	Yes No N/A
	nments:	\sim
6.	HOLDING TIMES (all levels)	
Sam	nples properly preserved?	
Sam	nple holding times acceptable?	Yes No N/A
	mments:	
		·

8. COMPOUND IDENTIFICATION, QUANTITIATION, AND DE	TECHON LIMITS (an
levels)	
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	Yes No N/A
Detection limits meet RDL?	
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	
9. SAMPLE CLEANUP (Levels D and E)	V Nollay
Fluoricil ® (or other aborbant) cleanup performed?	
Lot check performed?	
Check recoveries aceptable?	
Check materials traceable?	Yes No N/A
Check materials Expired?	Yes No N/A
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	V

Appendix 6 Additional Documentation Requested by Client

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Method Blank - Batch: 280-122215

Method: 8310 Preparation: 3550C

Lab Sample ID:	
Client Matrix:	
Dilution:	

Solid 1.0

MB 280-122215/1-A 06/06/2012 0727

Analysis Batch: Prep Batch: Leach Batch: Units:

Result

9.7

8.7

3.0

3.1 6.2

4.1

280-122503 280-122215 N/A ug/Kg

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume:

MDL

9.7

8.7

3.0

3.1

6.2

4.1

7.0

3.8

4.7

11

13

5.1

12

12

12

12

Column ID:

Qual

Ū

U

U

U

U

U

U

U

U

U

U

U

U

CHHPLC G G0605044.D 30.9 g 4000 uL 20 uL PRIMARY

RL

97

97

19

15

15

15

29

15 39

29

39 29

29

97

39

39

Prep Date: Leach Date:

Analysis Date:

06/01/2012 1811 N/A

Analyte	
Acenaphthene	
Acenaphthylene	
Anthracene	

Benzo(a)anthracene Benzo[a]pyrene Benzo(b)fluoranthene Benzo[g,h,i]perylene Benzo[k]fluoranthene

7.0 3.8 Chrysene 4.7 11 Dibenzo(a,h)anthracene Fluoranthene 13 5.1 Fluorene Indeno[1,2,3-cd]pyrene 12 Naphthalene

Surrogate Terphenyl-d14 (SUR)

Phenanthrene

Pyrene

12	U
12	U
12	U
% Rec	

Acceptance Limits

83

72 - 115

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Lab Control Sample - Batch: 280-122215

Method: 8310 Preparation: 3550C

Lab Sample ID:	LCS 280-122215/2-A	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605045.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.1 g
Analysis Date:	06/06/2012 0758	Units:	ug/Kg	Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1990	2060	103	78 - 116	
Acenaphthylene	1990	2000	100	76 - 115	
Anthracene	1990	2020	101	74 - 115	
Benzo[a]anthracene	1990	2140	107	85 - 120	
Benzo[a]pyrene	1990	1960	99	74 - 121	
Benzo[b]fluoranthene	1990	2170	109	85 - 115	
Benzo[g,h,i]perylene	1990	2130	107	85 - 120	
Benzo[k]fluoranthene	1990	2080	104	85 - 115	
Chrysene	1990	2110	106	83 - 115	
Dibenzo(a,h)anthracene	1990	2130	107	83 - 115	
Fluoranthene	1990	2130	107	83 - 115	
Fluorene	1990	2080	104	80 - 115	
Indeno[1,2,3-cd]pyrene	1990	2240	112	85 - 123	
Naphthalene	1990	2000	10 1	80 - 121	
Phenanthrene	1990	2080	104	80 - 115	
Pyrene	1990	2100	105	75 - 116	
Surrogate	% F	Rec	Ac	ceptance Limits	

Terphenyl-d14 (SUR)

90

72 - 115

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-122215

Method: 8310 Preparation: 3550C

MS Lab Sample ID:	280-29396-1	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605047.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	06/06/2012 0859			Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY
MSD Lab Sample IE): 280-29396-1	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605048.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.7 g
Analysis Date:	06/06/2012 0929			Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Leach Date: N/A

	. <u>%</u>	Rec.					
Analyte	· MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	102	89	78 - 116	10	20		
Acenaphthylene	99	86	76 - 115	5	21		
Anthracene	98	86	74 - 115	4	20		
Benzo[a]anthracene	106	94	85 - 120	3	20		
Benzo[a]pyrene	101	89	74 - 121	3	20		
Benzo[b]fluoranthene	110	98	85 - 115	3	20		
Benzo[g,h,i]perylene	107	94	85 - 120	4	20		
Benzo[k]fluoranthene	107	95	85 - 115	3	20		
Chrysene	106	94	83 - 115	3	20		
Dibenzo(a,h)anthracene	108	95	83 - 115	3	20		
Fluoranthene	106	93	83 - 115	4	20		
Fluorene	102	90	80 - 115	4	20		
Indeno[1,2,3-cd]pyrene	112	99	85 - 123	3	20		
Naphthalene	99	85	80 - 121	6	20		
Phenanthrene	103	90	80 - 115	4	20		
Pyrene	104	92	75 - 116	4	20		
Surrogate		MS % Rec	MSD	% Rec	Acceptance Limits		ts
Terphenyl-d14 (SUR)		85	63	*		72 - 115	

Date:

18 April 2013

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-IU-2 & 100-IU-6 Misc. Restoration Sites near 100F - Soil Full Protocol -

Waste Site 600-320:6

Subject:

Diesel Range Organics - Data Package No. J01528-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. J01528 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PP82	5/24/12	Soil	С	See note 1

^{1 -} Diesel range organics by NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all diesel range organic results were qualified as undetected, raised to the RQL and flagged "U".

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been

established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

· Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

· Completeness

Data package No. J01528 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

Due to method blank contamination, all diesel range organic results were qualified as undetected, raised to the RQL and flagged "U".

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DIESEL RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: J01528	REVIEWER: ELR	Project: 600-320:6	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	U at RQL	All	Method blank contmination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Client Sample ID:

J1PP82

Lab Sample ID:

280-29396-1

Client Matrix:

Solid

% Moisture:

5000

Date Sampled: 05/24/2012 1037

Date Received: 05/30/2012 0930

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch: Prep Batch:

280-123804

15.8

Instrument ID: Lab File ID:

GCS_U2 036F3601.D

Dilution:

280-122620

Initial Weight/Volume: Final Weight/Volume: 30.3 g

Analysis Date: Prep Date:

06/08/2012 2216 06/05/2012 1825

Injection Volume:

1000 uL 1 uL

Analyte C10-C36 DryWt Corrected: Y 5000

Qualifier Result (ug/Kg) 2000

MDL 1200 800

RL 4700 4700

Surrogate o-Terphenyl

C10-C28

%Rec 70

Qualifier

Acceptance Limits

49 - 115

Vylerle,

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-29396-1

SDG #: J01528 SAF#: RC-210

Date SDG Closed: May 30, 2012
Data Deliverable: 21 Day / Summary

CLIENT ID J1PP82 LAB ID 280-29396-1 **ANALYSES REQUESTED**

ANALYSES PERFORMED

6010B/7471/1311-6010-7470/WTPH-D+/8310

6010B/7471A/1311/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The sample was received on 5/30/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.2° C and 5.4° C.

Sample J1PP82, requesting TCLP Metals 1311/6010B/7470A analysis, was leached and placed on hold, as instructed on the chain-of-custody. On 6/19/2012, the client instructed the laboratory to cancel the requested TCLP Metals 1311/6010B/7470A analysis.

GC SEMIVOLATILES - NWTPH-Dx - DRQ

Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-122620. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The MSD aliquot of the MS/MSD performed on sample J1PP82 exhibited the surrogate recovery outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-121992 indicates that physical and chemical interferences are present for Cobalt, Nickel and Zinc. Results have been flagged with an "X".

Low levels of Nickel and Zinc are present in the method blank associated with batch 280-121992. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Page 3 of 33

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PP82; therefore, control limits are not applicable.

The duplicate analysis of sample J1PP82 exhibited RPD data outside the control limits for Arsenic, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

5.4,52 /AI 5,5/30

Collector MCORE, BR Com pasy Contact Telephone No. (509) 375-4688 Protect Designation Sets No. (509) 375-4688 Sampling Location (600-320:6) Ide Chest No. RC-07-012 Field Loebook No. EL-1651-03 Offsite Property No. Pleid Loebook No. Sec OSPC POSSIBLE SAMPLE HAZARDS/REMARKS Preservation Type of Container GP Off Structure Gold C No. of Container GP Offsite Property No. Cod 4C No. of Container GP Offsite Property No. Cod 4C No. of Container GP Offsite Property No. Cod 4C No. of Container GP Offsite Property No. Cod 4C No. of Container GP Offsite Property No. Cod 4C No. of Container GP Offsite Property No. Cod 4C No. of Container GP Offsite Property No. Cod 4C No. of Container GP No. of Contai	Washington Clos	ure Hanford	C	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST RC-210-045 Page 1								of L		
Preservation Storage Cool 4C CHAN OF POSSISSION Sample No.	Collector Company Contact				Telephor	e No.			Project Coordinator KESSNER, JH Price Code				Data Turnaround	
RCC 9-012 El. 1651-03 Offsite Procervy No. Processor No. Cod 4C No. of Constalacr Ope Op												8D	21	Days
Technology Prescription Prescription Cod 4C None Prescription Cod 4C None Prescription Cod 4C None Cod 4C C	Ice Chest No. RCC-	07-012					00			ent				J
Prestruition Cod 4C None Cod 4C Co	Shipped To TestAmerica Incorporated	Richland Demo	Offsite	e Property No.	A110	382	-			ir Bill N	0.			
Special Handling and/or Storage Cool of C Type of Container() Type of Container() Volume Sometime Indicated I	POSSIBLE SAMPLE HAZ	ARDS/REMARKS	370		1									
Special Handling and/or Storage Cool 4C No. of Container() Volume Sample No. Matrix * Sample Date	None			Preservation	Cool 4C	None	Cool 4C	Cool 4	«C					
SAMPLE ANALYSIS Sample No. Matrix * Sample Date Sample Time Seminorism Seminorism Sample No. Matrix * Sample Date Sample Time Seminorism Sem	Special Handling and/or	Storage		Type of Container				_						
SAMPLE ANALYSIS Semple No. Matrix * Sample Date Sample Time UPP82 SOIL 5/24/12 \ OST X X X X X X X X X X X X X X X X X X X	The same of the sa	Swinge		No. of Container(s)	1	1	1	1			_			,
SAMPLE ANALYSIS Sample No. Matrix * Sample Date Sample Time U1PP82 SOIL 5/24/12 O37 X X X X X X X X X X X X X				Velume	60mL	120mL	120mL	120m	nL		1			
CHAIN OF POSSESSION Sign/Print Names Relinquinded By/Removed From Dest/Time		SAMPLE ANA	LYSIS		Special	Special	TPH-Diesel Range - WTPH-D +	PAH:	E310	¥.,	T			
CHAIN OF POSSESSION Sign/Priat Names Relinquished By/Removed From Dest/Time Dest/Time Dest/Time Dest/Time Dest/Time Dest/Time Dest/Time Relinquished By/Removed From Dest/Time Relinquished B														
CHAIN OF POSSESSION Sign/Priat Names Relinquished By/Removed From Date/Time Date/Time Date/Time Relinquished By/Removed From Date/Time Date/Time Relinquished By/Removed From Date/Time Relinquished By/Removed From Date/Time Relinquished By/Removed From Date/Time Relinquished By/Removed From Date/Time Received By/Stored in Date/Time Date/Ti	Sample No.	Matrix *	Sample Date	Sample Time	THE REAL PROPERTY.		THE STATE OF THE S					S SALES		
CHAIN OF POSSESSION Relinquished By/Removed From DeterTime Received By/Stored In DeterTime Specific By/Stored In DeterTime Received By/Stored In DeterTime	J1PP82	SOIL	6/24/12	1037	X	X	X	X			-	-		-
CHAIN OF POSSESSION Relinquished By/Removed From DeterTime Received By/Stored In DeterTime Specific By/Stored In DeterTime Received By/Stored In DeterTime											-			-
CHAIN OF POSSESSION Relinquished By/Removed From DeterTime Received By/Stored In DeterTime Specific By/Stored In DeterTime Received By/Stored In DeterTime											_			
CHAIN OF POSSESSION Relinquished By/Removed From DeterTime Received By/Stored In DeterTime Specific By/Stored In DeterTime Received By/Stored In DeterTime														
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Retinquished By/Removed From Date/Time Received By/Stored In Date/Time	Brandt More the	5-24-/2 1320 Date/Time 15	9 Don t	Binghan D	5.21 atc/Time 106 12 /5	(1) I ##/ Cada Nick	CP Metals - 60 nium, Calcium, el, Potassium,	010TR (Cl., Chromius Sclenium,	oso-out List) (Alumin m, Cobalt, Copper, Iro Silicon, Silver, Sodian	um, Antis va, Lead, I va, Vanadir	Magnesium, Ma um, Zinc); Me	inginese, Molybo roury - 7471 - (C'	ouem, V)	SD-Solid SD-Solid SI-Solige W = Water O-Oli
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Relinquished By/Removed From Date/Time Received By/Stored In Date/Time LABORATORY SECTION FINAL SAMPLE Disposed Method Received By/Stored In Date/Time Disposed By Disposed By Disposed By Disposed By Disposed By Disposed By	PORTUGAL DE SERVICE MAN	Dete/Time#00# 5-29-12 08		din Ged CX	ata/Time	ma	feeds by ICDA	THE PER	1311/6010 (Arsenic, E 1/7470 (Mercury)	Berium, Cr	edmium, Chron	nium, Lead, Selen	iua,	DG-Deam Estate DL-Deam Liquids ToTismes
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Title Date/Time	Retinquished By/Removed From	Date/Time	Received By/Stu	B	730/14		/ ne	BY A	-	500	,			L-Liquid V-Wagazzion
LABORATORY SECTION FINAL SAMPLE Disposel Method Date/Time Disposed By Disposed By Disposed By Disposed By	Relinquished By/Removed From	Date/Time		ωш			(B	ATE	7	5015	38			X=Other
LABORATORY SECTION Received By Time FINAL SAMPLE Disposed Method Disposed By Detectine	Relinquished By/Removed From	Date/Time	Received By/Stor	red In D	late/Time		15	27-1	/					<u></u>
FINAL SAMPLE Disposel Method Disposed By DeterTime	AZZDONGAN ONT	Ву			Tie	ie			300					
	FINAL SAMPLE Disposel	Method.					Disp	osed By				I	eto/Time	

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(°)	D	
PROJECT:	60-320	: C	DATA PACKAG	E: JOISE	28
VALIDATOR:	ELK	LAB: T	41	DATE: 4	14/13
			SDG: JO	1528	
		ANALYSES	PERFORMED		
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	У ТРН-D	
					·
SAMPLES/MA	TRIX:				
	97				
		<u> </u>			
DATA	DACKAGE COM	DI ETEMESS AND	CASE NARRATIV	VF.	soil
echnical verifica	ation documentatio	PLETENESS AND n present?			
echnical verification	ation documentatio	n present?			
Comments:	ument TUNING	n present?	TION (Levels D and	E)	Yes No N
comments: INSTR	ument TUNING	n present?	TON (Levels D and	E)	Yes No N
comments: INSTRI nitial calibration Continuing calib	UMENT TUNING as acceptable?	n present?	TION (Levels D and	E)	Yes No N
Comments: INSTR nitial calibration Continuing calib	UMENT TUNING as acceptable?	n present?	ION (Levels D and	E)	Yes No
2. INSTRI nitial calibration Continuing calib Standards traceal	UMENT TUNING as acceptable? ple?	n present?	TION (Levels D and	E)	Yes No N
2. INSTRI Initial calibration Continuing calib Standards traceal Standards expire Calculation chec	UMENT TUNING as acceptable? ble? d?	n present?	ION (Levels D and	E)	Yes No N Yes No N

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	
Calibration blank results acceptable? (Levels D, E)	
Laboratory blanks analyzed?	
Laboratory blank results acceptable?	
Field/trip blanks analyzed? (Levels C, D, E)	
Field/trip blank results acceptable? (Levels C, D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (N/)
no FB	
4. ACCURACY (Levels C, D, and E)	Ves No N/A
Surrogates/system monitoring compounds analyzed?	Vas Na N/A
Surrogate/system monitoring compound recoveries acceptable?	Yes No N/A
Surrogates traceable? (Levels D, E)	Yes No N/A
Surrogates expired? (Levels D, E)	Vas No NA
MS/MSD samples analyzed?	IV- No N/A
MS/MSD results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No NA
MS/MSD standards expired? (Levels D, E)	Yes No N/A
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	Yes No NA
Standards traceable? (Levels D, E)	163 140 1407
Standards expired? (Levels D, E)	Yes No (N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Performance audit sample(s) analyzed?	Yes 'No N/A
Performance audit sample results acceptable?	Yes No (N/A
Comments:	- 771-

5.	PRECISION (Levels C, D, and E)	
Duplio	cate RPD values acceptable?	No N/A
Duplic	cate results acceptable?	Yer No No
MS/M	ISD standards NIST traceable? (Levels D, E)	Yes No
MS/M	1SD standards expired? (Levels D, E)	Yes No
Field o	duplicate RPD values acceptable?	Yes No
Field s	split RPD values acceptable?	Yes No 2173
Transo	cription/calculation errors? (Levels D, E)	Yes No N/A
Comm	nents:	
6.	HOLDING TIMES (all levels)	Yes No N/A
	oles properly preserved?	
Samp	ole holding times acceptable?	Yes No N/A
Comr	ments:	

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DI	ETECTION LIMITS (an
levels)	
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	Yes No (N/)
Detection limits meet RDL?	Yes) No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Comments:	
,	\sim
9. SAMPLE CLEANUP (Levels D and E)	, , , , , , , , , , , , , , , , , , , ,
Fluoricil ® (or other aborbant) cleanup performed?	Yes No N/A
Lot check performed?	Yes No N/A
Check recoveries aceptable?	Yes Nd N/A
Check materials traceable?	Yes No N/A
Check materials Expired?	
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	\ /

Appendix 6 Additional Documentation Requested by Client

Quality Control Results

Job Number: 280-29396-1

Sdg Number: J01528

Method: NWTPH-Dx Method Blank - Batch: 280-122620 Preparation: 3550C

Lab Sample ID: Client Matrix:

MB 280-122620/1-A Solid

Analysis Batch: Prep Batch: Leach Batch: Units:

280-123804 280-122620 N/A

Instrument ID: Lab File ID:

GCS_U2 034F3401.D 30.3 g

06/08/2012 2127 Analysis Date:

Prep Date: Leach Date:

Dilution:

06/05/2012 1825

N/A

1.0

Client: Washington Closure Hanford

ug/Kg

Initial Weight/Volume: Final Weight/Volume: 1000 uL

Injection Volume:

1 uL

Analyte	Result	Qual	MDL	RL
C10-C36	1230	J	990	4000
C10-C28	920	J	670	4000
Surrogate	% Rec		Acceptance Limits	
o-Terphenyl	75		49 - 115	

Lab Control Sample - Batch: 280-122620

Method: NWTPH-Dx Preparation: 3550C

Lab Sample ID: Client Matrix:

LCS 280-122620/2-A Solid

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-123804 280-122620

N/A ug/Kg

Instrument ID: Lab File ID:

Initial Weight/Volume:

Final Weight/Volume:

GCS_U2 035F3501.D 31.6 g 1000 uL

1 uL

Analysis Date: Prep Date: Leach Date:

Dilution:

06/08/2012 2152 06/05/2012 1825

1.0

Injection Volume:

Limit Qual % Rec. Result Spike Amount Analyte 57 - 115 63300 49400 78 C10-C36 53 - 115 63300 48900 77 C10-C28 Acceptance Limits % Rec Surrogate 79 49 - 115 o-Terphenyl

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-29396-1

Sdg Number: J01528

Method: NWTPH-Dx Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-122620 Preparation: 3550C

Analysis Batch:

Prep Batch:

Leach Batch:

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MS Lab Sample ID: 280-29396-1 Client Matrix: Solid Dilution: 1.0

06/08/2012 2240 Analysis Date: Prep Date: 06/05/2012 1825

Leach Date:

MSD Lab Sample ID: 280-29396-1 Client Matrix: Solid Dilution:

06/08/2012 2304 Analysis Date: 06/05/2012 1825 Prep Date:

Leach Date: N/A

o-Terphenyl

280-123804 Instrument ID: Analysis Batch: Prep Batch: 280-122620 Lab File ID:

Leach Batch:

280-123804

280-122620

N/A

Initial Weight/Volume: Final Weight/Volume:

Injection Volume:

037F3701.D 30.5 g 1000 uL

1 uL

GCS_U2

Instrument ID: GCS_U2 038F3801.D Lab File ID: Initial Weight/Volume: 30.6 g Final Weight/Volume: 1000 uL

Injection Volume: 1 uL

% Rec. RPD **RPD Limit** MS Qual MSD Qual MSD Limit MS Analyte C10-C36 88 84 57 - 115 4 23 C10-C28 88 85 56 - 115 23 Acceptance Limits MS % Rec MSD % Rec Surrogate 49 - 115 75

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